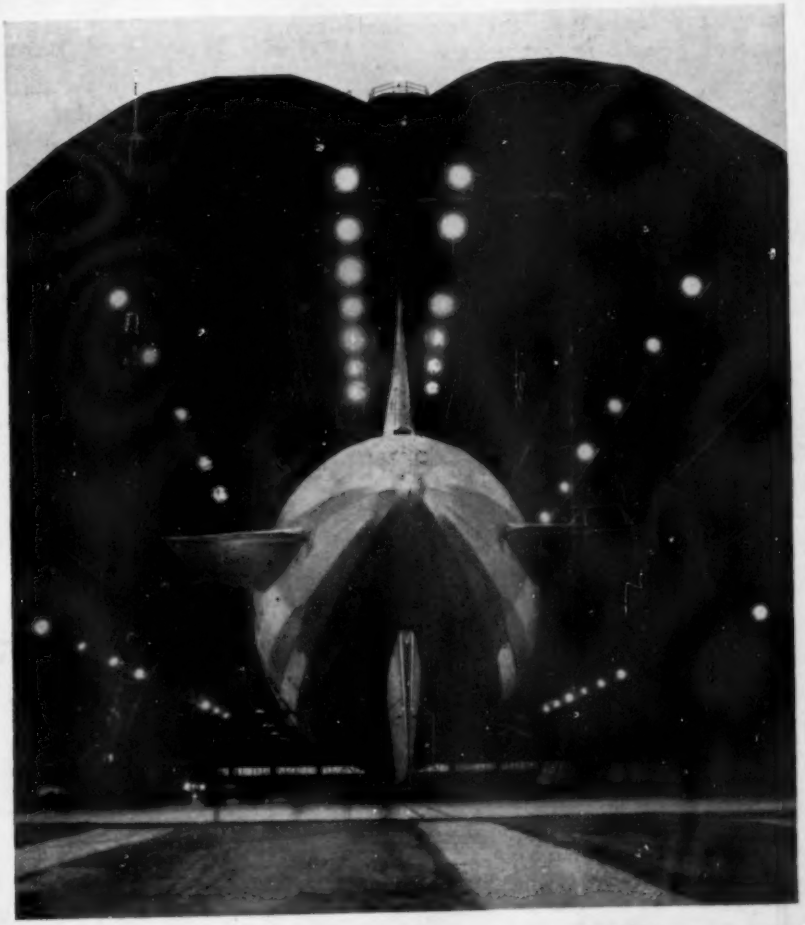
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



APRIL 29, 1933

Leaving The Nest

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A SCIENCE SERVICE PUBLICATION

SCIENCE NEWS LETTER

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The Weekly Summary of Current Science

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Edited by WATSON DAVIS

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DO YOU KNOW?

There are more than a thousand practical uses for bamboo.

The gray squirrel is credited with planting most of our nut-bearing forest trees.

The number of diabetic patients throughout the world who are taking insulin is thought to be over a million.

Two species of South African snake, the ringhals cobra and the black-necked cobra, can spray their venom several feet.

Typhoid carriers, persons who harbor the germs of typhoid in their bodies, may never have had any recognized case of typhoid fever themselves.

Londoners who want "information, please," about fares and trains in the subway now ask their questions by dialing on an electric board which flashes the answers.

The book bindery at the University of Michigan has salvaged $150 in gold by smelting the sponge rubber erasers used to wipe off excess gold leaf from newly lettered bindings.

Girls grow more rapidly than boys from the tenth to the fourteenth year.

The recent earthquake in southern California caused no damage to lighthouses, it has been reported.

The Franklin Institute in Philadelphia has acquired a globe that represents not the earth but the planet Mars.

The world's largest microscope, seven feet high, will be exhibited at the Chicago Century of Progress Exposition.

A new leprosy station in the Philippines has been named the Leonard Wood Memorial for the Eradication of Leprosy.

A new device for measuring electric currents can record resistances of a trillion ohms, and will be helpful to scientists studying X-rays, cosmic rays, and starlight.

Health officials warn that narcissus bulbs contain a very poisonous substance, and therefore discarded bulbs should be burned or disposed of, so that they cannot be mistaken for edible vegetables.

WITH THE SCIENCES THIS WEEK

ANATOMY

How are children like tree-climbing animals? p. 260. *Up From the Ape—Earnest A. Hooton—Macmillan*, 1931, $5.

ANTHROPOLOGY

How old is modern man? p. 269. *Human Origins, A Manual of Prehistory—George G. MacCurdy—Appleton*, 1924, 2 vol., $10.

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ARCHAEOLOGY

How long was the "Dark Age" of ancient Greece? p. 265.

ASTRONOMY

In what direction is the solar system rushing? p. 260.

What is the modern fame of Canes Venatici? p. 262. *Astronomy—H. N. Russell, R. S. Dugan and J. Q. Stewart—Ginn*, 1926, 2 *vol., each* $2.48.

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What is a weed? p. 266.

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How did America acquire its taste for whoopee parties? p. 261.

METEOROLOGY

What happens to atmospheric pressure when solar radiation increases? p. 260.

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Are people likely to suffer from magnesium deficiency? p. 259.

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What is a Cordaites? p. 264. *Plants of the Past—F. H. Knowlton—Princeton*, 1927, $3.50.

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What is a "minus color?" p. 265.

What is the greatest elevation at which cosmic rays have been measured? p. 264.

PHYSIOLOGY

Can blood cells be made responsive to a magnet? p. 261.

What happens to people breathing more oxygen than ordinary atmosphere contains? p. 265.

What is meant by rhythm of the liver? p. 259.

What is sympathin? p. 267.

When are men most fertile? p. 264.

SEISMOLOGY

When did America feel a more severe earthquake than the recent disastrous California shock? p. 267.

These curiosity-arousing questions show at a glance the wide field of scientific activity from which this week's news comes. Book references in italic type are not sources of information of the article, but are references for further reading. Books cited can be supplied by Book Dept., Science News Letter, at publishers' prices, prepaid in U. S.

NUTRITION

Death From Deficient Diet May Not be Starvation

Rats Deprived of Magnesium, For Example, Die Because of Faulty Use of Fats by the Body

DEATH from an inadequate diet may not be starvation.

The old scientific idea, that when an animal did not get enough of a vitamin or other essential food factor in his diet, his subsequent death was really a form of starvation, has been completely upset by studies of Drs. E. V. McCollum, H. D. Kruse and Elsa Orent of the Johns Hopkins School of Hygiene. Dr. Kruse reported the studies to the National Academy of Sciences.

When an animal does not get enough vitamin B in its diet, the changes in his body as seen after death are identical with those seen in starvation, Dr. Kruse explained. Reasoning from this, scientists have believed that death from any dietary deficiency was the same as starvation.

But the Johns Hopkins scientists have found that when the animal gets too little magnesium in the diet, the picture after death is not one of starvation but of faulty use of fats by the body.

Therefore they believe it is no longer possible to say that death from any and every dietary lack is starvation. So far, they pointed out, this has actually been proved only for vitamin B, and even here the evidence is weak, it appears. The chief symptom of lack of vitamin B is loss of appetite. Animals getting too little B in their diet do not eat enough and actually do die of starvation.

Use of Fat

Whether or not faulty use of fat is the cause of death in other dietary deficiencies aside from magnesium lack is not known at present.

The study of rats fed a diet lacking in magnesium has also thrown light on another important scientific problem, that of the role of the fat, cholesterol, in the body, Dr. Kruse explained. Scientists are not even sure whether this fat has any function, though there is some recent evidence for it. The study reported gives another hint that cholesterol has a function in the body.

The remarkable changes in the rats when deprived of magnesium, their turning bright red, becoming extremely nervous and subject to convulsions like those of tetany, and the effect on their sexual organs, were reported two years ago. At that time the study had been made in the interests of pure science, to determine whether magnesium was a dietary essential. Apparently it is, but very small amounts of it are required. No cases of illness from lack of it had been reported.

Magnesium Cures Cows

Since the first report of the Johns Hopkins investigators, however, a Dutch scientist, Sjollema, has reported that a complaint in cows of the Netherlands, after they have been in the stalls all winter, is apparently due to lack of magnesium in the diet. The disease among cattle has been a source of considerable economic loss. By giving the cattle magnesium and calcium, Dr. Sjollema finds that he can relieve the condition, almost magically, he says, if he gives the treatment early enough.

While it is not known whether humans ever become ill from too little magnesium, there is no cause for alarm, Dr. Kruse commented.

"Certainly the ordinary individual is not likely to develop magnesium deficiency on the ordinary mixed diet," he said.

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PHYSIOLOGY

Daily Rhythm of Liver Found Due to Food

THE LIVER has rhythm. Food plays the role of band leader and sets the time for it. Experiments showing this effect of food on liver were reported by Dr. George M. Higgins and associates, Joseph Berkson and Eunice Flock, of the Mayo Clinic to the American Association of Anatomists.

Observations on animals first showed that the liver had rhythm, a slow rhythm

ARK OF THE COVENANT IN JEWISH ART

When archaeologists from Yale and the French Academy dug into a Jewish synagogue at Dura-Europos they found wall paintings such as this. The synagogue dates from 244 A.D., and these pictures are the earliest Old Testament scenes found in a house of worship. This painting represents the Hebrew ark of the covenant being returned after the Philistines captured it in a terrific battle. The Philistines had triumphantly set the captured ark in the house of their god Dagon, but terrible things happened. The painting shows the ark being returned to its owners. It was drawn by two "milch kine" on a cart containing "jewels of gold" which were a trespass offering. At right, Dagon's pedestal stands empty and below is the shattered idol. The story is told in I Samuel, Ch. IV.

of about two beats a day. Twice in every 24 hours the weight of the liver and of many of its analyzable constituents showed rhythmic increase a definite number of hours after the animals had eaten a standard meal.

When animals were fed at 9 o'clock in the morning, after going without food for several hours, an increase in the weight of the liver equal to about 30 or 35 per cent. had occurred by 5 in the afternoon, Dr. Higgins explained. At 9 in the evening the total weight of the liver had fallen so that its increase was about 16 per cent., but at 1 in the morning its weight was again as great as it had been at 5 in the preceding afternoon. Following this second increase in its weight during the night, the size of the liver gradually decreased until at 9 in the morning it weighed just what it did before the animal was fed 24 hours previously.

By shifting the hours at which the animals were fed, Dr. Higgins and associates found that the liver's rhythm was due to feeding and absorption of food constituents and not to the time of day. Six hours after eating a meal the animals' livers had increased essentially the same amount in weight, irrespective of whether the animals had eaten during the day or during the night.

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METEOROLOGY

Solar Radiation Said to Change Weather Map

VARIATIONS in the sun's radiation were credited with causing changes in the high- and low-pressure areas in the earth's atmosphere, by H. H. Clayton of Canton, Mass., who spoke before the National Academy of Sciences.

In a study of Smithsonian records extending back for twenty years, Mr. Clayton said he had discovered that pressure in high pressure areas was increased during periods of increased solar radiation, while the pressure of low pressure areas dropped. The centers of falling pressure, he continued, were in regions of low vapor content, while the centers of rising pressure were in regions of high vapor content, indicating activity by water vapor in determining the effect of solar radiation on the atmosphere. These centers were found to shift with the seasons. Correlations of solar radiation with rainfall have also been found.

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ASTRONOMY

Solar System Hurtling South At 450,000 Miles Per Hour

Long Search For Ether-Drift by Dr. Miller Reveals Influence of Earth's Motion on Velocity of Light

FOR THE FIRST time science is able to say whither and how fast the solar system is hurtling through space. Dr. Dayton C. Miller of the Case School of Applied Science, Cleveland, announced to the National Academy of Sciences that the sun with its earth and other planets is moving southward in the direction of the famous Great Magellanic Cloud of stars at the immense velocity of 450,000 miles per hour (208 kilometers a second or 125 miles per second) which is thousands of times faster than the ordinary airplane speed.

The First Time

For the first time also Dr. Miller has detected positively the effect of the motion of the earth in its orbit around the sun.

This means that he has detected an "ether-drift." This is expected to have reverberations in the field of theoretical physics and astronomy.

Einstein based his principle of relativity on the fact that Michelson and Morley, American physicists, years ago attempted without success to find an effect of an all-pervading "ether" upon the velocity of light. Over a long period of years Dr. Miller has repeated the famous Michelson-Morley experiment with great refinements at Cleveland and at Mt. Wilson, Calif. In one series of experiments he made about 200,000 single readings of his delicate instruments which measure the shift of light interference fringes caused by the difference in time required by two beams of light from the same lamp to travel equal distances in different directions.

Indirect Effect

The movement of the earth through the "ether" causes an indirect or second order effect in the interferometer used by Dr. Miller. So he concludes from a careful reanalysis of his extensive data just completed "without any presumptions as to the results." He at last finds in the ether-drift observations the effect of the orbital motion of the earth which has been suspected and searched for over a period of 46 years. What effect this reversal of the first results of the Michelson-Morley experiment will have on the "new physics" so fruitful today is not yet determined.

Dr. Miller in his first interpretations was misled by attempting to make the result fit into what seems to be a general drift among the closer stars toward the north. Actually it turns out that the solar sysem is rushing southward, with the apex of its cosmic motion in the southern constellation of Dorado, the swordfish, about twenty degrees south of the second brightest star in the heavens, Canopus. This point toward which the sun and its family are moving is almost pedpendicular to the plane of the ecliptic in which the planets move around the sun.

"This suggests that the solar system might be thought of as a dynamic disk which is being pulled through a resisting medium, and which therefore sets itself perpendicular to the line of motion," Dr. Miller told the academicians.

Efforts to verify certain predictions of the so-called classical theories and the influence of traditional points of view were charged by Dr. Miller with having delayed the discovery of ether drift and the cosmic motion of the solar system.

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ANATOMY

Childhood Characters Recall Simian Ancestry

REMINISCENCES of our tree-climbing ancestry are to be found in the physical structures of children as well as in the stages before birth, Dr. C. B. Davenport of the Carnegie Institution of Washington told the National Academy of Sciences at its meeting. He reminded his hearers that "at birth the child is still far from an adult in proportions of parts, and has still to pass through a series of changes shown by adult primates."

One of these childish characteristics

is the shape of the chest. This region in a baby is approximately cylindrical; only as growth proceeds does the human chest become wider than it is deep. The cylindrical shape is characteristic of the tree-climbing primates, Dr. Davenport said.

Another ancestral trait we show when we are very young is the rapid growth of the thigh region as compared with the lower leg. This predominance of the thigh is again a characteristic of tree-climbing animals. Later, at the age of eleven or twelve, the lower leg catches up and we become real ground-walkers.

Again, the full development of the foot as a ground-walking organ is realized only as we approach adolescence, when the simian-like low instep gives way to the truly human high foot arch. At the same time, the relative length of the foot decreases; quite long feet are common to children and apes. But while the foot is shortening the heel bone assumes relatively greater length; a short heel is another thing which young children share with simians.

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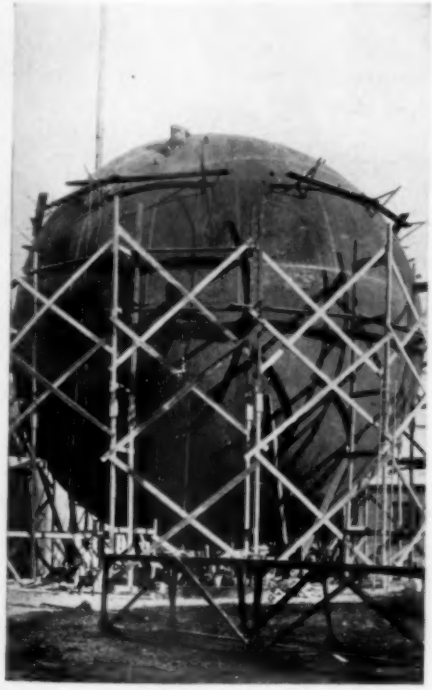

CONCENTRATED

More gas in the same amount of tank, is what the builders of this steel sphere 45 feet in diameter at Shrewsbury, Mo., really accomplished. This shape makes possible greater volume and higher pressures without excessive strain. (SNL, Sept. 13, '30, p. 175) The capacity is 162,000 cubic feet at 50 pounds per square inch. After 1,256 linear feet of seam were electrically welded the tank stood a soap suds test at 70 pounds air pressure.

PHYSIOLOGY

Magnet Pulls Corpuscles Out of Circulation For Study

PULLING blood cells out of the veins with a magnet is the novel method devised by scientists of the Rockefeller Institute who wanted to study a particular group of cells. The two ingenious scientists, Drs. Peyton Rous and J. W. Beard, described their method before the National Academy of Sciences.

The cells of this case are very active scavenger cells that quickly and thoroughly purge the blood of foreign matter by gobbling it up. These cells, known to scientists as Kupffer or reticulo-endothelial cells, are found in the liver, spleen, and bone marrow as well as the blood. They have been credited with a host of important functions, such as making the coloring matter of bile and making the germ-resisting antibodies that help us to ward off attacks of disease.

Exact knowledge has been lacking, however, largely because no one was ever able to get the living cells out of the body for study. Now the Rockefeller investigators have done just that. Iron injected into the blood, in the form of highly magnetic iron oxide, is quickly gobbled up by these scavenger cells. This makes them highly attractive to a magnet. The iron-containing cells are loosened from their principal location in the liver by means of massage and a stream of fluid. They are then separated from the host of other elements suspended in the fluid and pulled out by the electro-magnet, just like so many iron filings.

The magnetically held cells are then washed and carefully released into a culture medium on which they will live and grow and where they can be studied directly. Drs. Rous and Beard are now conducting experiments to determine the functions of these cells.

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ETHNOLOGY

Drinking Map of World Traced By Anthropologist

FERMENTED drinks are widely distributed among the native cultures of world peoples, yet they are not universally distributed. There are extensive natural "dry areas" on the culture map of the world, Dr. John M. Cooper of the Catholic University of America stated before the Catholic Anthropological Conference.

In general, the primitive non-agricultural peoples did not have fermented beverages until they learned their use from white men or other races of more elaborate civilization than their own. The great "dry" areas of the map include practically all of North America above the present Mexican border and the great tundra and wilderness area of northern Eurasia. To the south, Patagonia and Fuegia in South America are natural "dry" areas, as is also that most primitive of continents, Australia, together with most of Polynesia.

The herdsmen-peoples of interior Asia have a fermented drink made from milk of mares or camels, called kumiss. Elsewhere the agricultural peoples have native drinks based on their own products: grape wine and grain beer in the Mediterranean area, beer and honey mead in northern Europe, palm wine, beer and mead in Africa, rice and palm wines in eastern Asia, and maize beer or chicha in Mexico and South America. In all these areas there were small groups of primitive nomads who were still teetotalers although surrounded with drinking peoples.

Styles in drinking varied according to locality and race, Dr. Cooper pointed out. South of the Alps, steady but moderate drinking was and is the mode; in northern Europe the drinking bout ruled. Our own culture, deriving from northern Europe to a large extent, still preserves in "whoopee parties" the ancient drinking bout of our half-barbarian ancestors.

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ASTRONOMY

Planets Race Across the Sky

Nine First Magnitude Stars Will Light Constellations Of Heavens During Mild May Evenings

By JAMES STOKLEY

THE PLANETARY race is the chief feature of the May evening skies. Through the late winter and early spring the planets Mars and Jupiter have been conspicuous in the evening, first in the east and later in the southeast. During that time the distance separating these two bodies has not changed greatly, and both have been moving slowly westward through the sky.

Such a motion is called "retrograde" and occurs when the more rapidly moving earth moves past the other planets. Last month Mars was stationary among the stars for a brief period; then it started to move directly, that is, eastward. On the tenth of this month Jupiter will also be stationary; then it, too, will start its direct, easterly motion.

In the beginning of the month the two planets will be in the southern sky, Jupiter, the brighter, to the east and a little lower than its companion. At that time they will be about ten degrees apart, a distance which is equal approximately to twenty times the apparent diameter of the full moon. But if you continue to watch them night after night you will soon find that they are drawing together. At the end of the month Jupiter will still be to the east but only about a degree, twice the moon's diameter, away from its neighbor. They will be in conjunction, that is, closest, on the fourth of June when Mars will be about a quarter of a degree to the south. On June 1 the moon, then at first quarter, will pass them about five times its diameter to the south, making a rare celestial spectacle of exceptional interest.

Mars and Jupiter will not be the only planets in this race though the third will be invisible to the naked eye. Between Mars and Jupiter in the first half of May is the planet Neptune, most distant known member of the solar system until the discovery of Pluto a few years ago. Neptune is of the 7.7 magnitude, bright enough to be visible through a small telescope. An instrument with a lens at least three inches in diameter, however, would be needed to enable the observer to distinguish the difference between it and a star. On May 16 Mars passes about three-quarters of a degree to the north of Neptune. The closest approach occurs in the afternoon at about 4 p. m., Eastern Standard Time, but in the evening they will still be near together. Just after sunset and as soon as it gets dark they will be almost directly south and within a degree of each other.

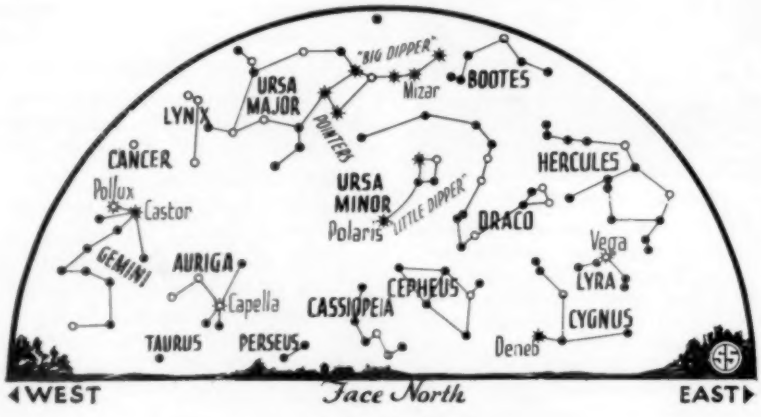
Neptune Near Mars

If you have a small telescope and want to try picking up Neptune, you should rest the telescope on a steady support and point it to Mars. About one and a half times the diameter of the moon below it you may be able to see what looks like a star. This is Neptune. There is no star as bright as Neptune in this particular region, so the brightest object that you see is probably the planet. With a larger telescope there should be no difficulty about distinguishing that Neptune has a disc, in contrast to the point of light which the stars present even when examined through the biggest telescope in the world.

Earlier in the month the moon passes close to Mars and Jupiter in its wanderings. On May 4, when it is just two days past first quarter, the moon comes within about four times its own diameter of that planet, passing to the north. The close approach, called the conjunction, occurs during the day, so in the evening the moon will already have passed the planet and will be between the two, making an attractive sight. Early the following morning comes the conjunction of Jupiter and the moon. Hence on the night of the fifth the three bodies will be nearly in line. On May 15 the moon passes Saturn, which can be seen in the eastern sky in the early morning hours. It is in the constellation of Capricornus.

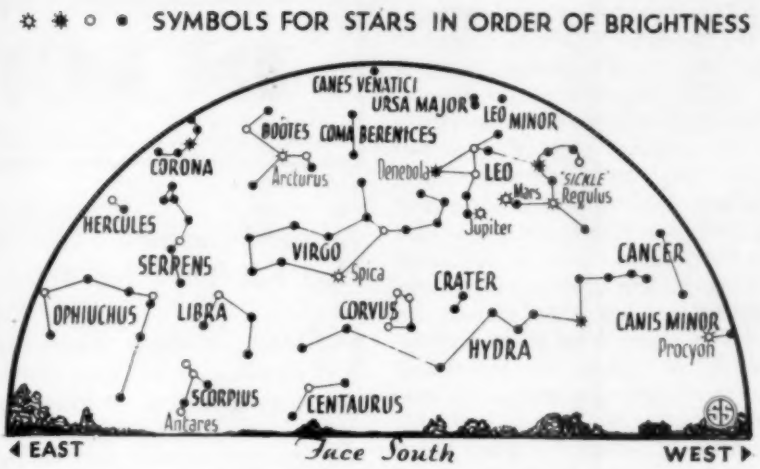
With the moon reaching first quarter on the second, being full on the ninth, going into last quarter on the sixteenth and becoming new on the twenty-fourth, the evenings will be moonlit during the first ten days or so of the month and again at the very end.

Turning now to the stars of the May evening sky we find that the month boasts a display of nine of the first magnitude. Leo has already attracted our attention because of the presence in it of Mars and Jupiter, but even without these bodies, it is an interesting constellation. The Sickle is one of the most familiar of the unofficial star groups and it is now hanging high in the southwest, the handle pointing down and the curved blade to the west. The bright star at the end of the handle is Regulus. The rest of the lion is formed by stars to the east of the sickle, three of which shape a little right triangle with the star Denebola at the eastern angle. Denebola, however, is not of first magnitude.



OUTPOURING

The well-known constellation Ursa Major, "Big Dipper," is up-side-down high in the northern sky where it may be easily seen, even through the glare of city lights.



INVISIBLE NEPTUNE HERE

All three planets are close together in the southern skies. Brilliant Mars and Jupiter are plainly visible, but to see Neptune, which is near Mars, you will have to use a small telescope.

Directly west is the constellation of Gemini, the twins, with Pollux, the brighter of the two brothers, of the first magnitude. Castor is the other brother. Near Gemini and low in the northwest is Capella, marking Auriga, the charioteer. To the south of Gemini and also near the horizon is Procyon, the brilliant star that distinguishes Canis Minor.

Leo is one of the zodiacal constellations occupying the ecliptic, path of the sun, moon and planets through the stars. Gemini is also one of these, but between the two is another, Cancer, which is not marked by any stars as brilliant as the first magnitude. Leo's next-door neighbor on the other side is Virgo, the virgin, which contains Spica, the bright star that is almost directly south about ten o'clock in evenings of the early part of the month. Then comes Libra, which also consists of fainter stars, then Scorpius, which is now seen low in the southeast, and in which is found Antares. This star is of a pronounced reddish color, which is enhanced by reason of the fact that it is now seen near the horizon. If you wait until late in the evening, you will see this star riding higher in the sky.

The star Arcturus is one of the most conspicuous stellar objects in May. It is in Bootes, to the southeast of the zenith, and is more brilliant than any star in that part of the sky. Lower and in the northeast is an even brighter star, Vega, which identifies the constellation of Lyra, and just below Lyra is Cygnus, in which can be seen first magnitude Deneb. Unless you wait until later in the evening, however, only part of Cygnus can be seen, and Deneb is not as conspicuous as it will be a few months from now, when the northern cross, of which it marks the head, will be high in the heavens.

The Great Dipper is now high in the north, the bowl turned downwards. This may be used as a guide to another constellation that is not nearly so well known as it is one of the minor star groups—the hunting dogs, Canes Venatici. At ten o'clock in the beginning of the month and about an hour earlier in the middle, this group is overhead. If you imagine the curve made by the handle of the Great Dipper and the side of the bowl opposite the pointers to be continued into a circle, Canes Venatici will be just at the center.

Named For King

The brightest star in this group is only of the 2.9 magnitude, but it has a proper name, Cor Carolii. This name was given it in 1725 by Edmund Halley, of comet fame, who was then Astronomer Royal of England, in honor of King Charles II. According to the story, Sir Charles Scarborough, the court physician, suggested it to Halley and said that it had shone with special brilliance on May 28, 1660. This was the night before Charles returned to the throne upon the restoration of the Stuarts after the regime of Cromwell had been overthrown.

The usual name of the constellation, Canes Venatici, dates from about the same period. In the earlier star maps, there were several regions of the sky, devoid of very bright stars, which were not occupied by any of the recognized constellations, most of which date back to antiquity. But in 1687 a Polish astronomer, Johannes Hevelius, of Danzig, published a beautiful set of star maps called the "Firmamentum Sobiescianum," named in honor of the ruling family of Poland. In this he filled up a number of these empty spaces introducing the constellation of the hunting dogs for the first time, along with such other now familiar groups as the Lynx, Leo Minor, Lacerta, the lizard, Vulpecula, the fox, Sextans, the sextant and Scutum Sobieskii, Sobieski's shield. The dogs, chasing the great bear, were held in leash by Bootes.

In the recent days of astronomical photography the constellation of Canes Venatici has gained a new distinction. In it is found one of the finest of the external galaxies, systems of stars beyond the one of which our sun and all the stars we see in the night sky are members. A few years ago these objects were called "spiral nebulae," because of their pinwheel-like structure, but this name is passing out of use since the true nebulae are masses of glowing gas. The researches of the past decade have shown conclusively that these objects are swarms of stars, but so far distant, a million light years or more, that even through the largest telescopes most of them appear as luminous masses without any detail. Two of the closest have, however, been resolved into stars by photographs made with the Mt. Wilson 100-inch telescope. Messier 51, as the galaxy in Canes Venatici is known, is just a little too far for the 100-inch instrument, but doubtless it will be one of the first things studied with the 200-inch telescope that is now being constructed for the California Institute of Technology. Then we may confidently expect that this rather faint constellation will again come into great scientific prominence.

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A fishpond 400,000,000 years old was described before the meeting of the American Philosophical Society by W. L. Bryant, director of the Park Museum in Providence, R. I.

This deposit of fish fossils of Devonian age consists of a lens-shaped mass of limestone having every appearance, Mr. Bryant said, of an ancient watercourse filled with sediment. In it were found the remains of primitive fishes and still more primitive fish-like creatures known as ostracoderms. Remains of exceedingly early land plants were also present.

PHYSICS

Cosmic Rays Measured In Stratosphere

COSMIC RAYS have been measured as they plunge through the earth's stratosphere 18 kilometers (over 11 miles) above sea level. Three successful flights of pilot balloons bearing cosmic-ray measuring devices were described by Prof. Robert A. Millikan of the California Institute of Technology in an address before the National Academy of Sciences. On two of them the effects were measured at 18 kilometers elevation.

At this great height, Prof. Millikan reported, the cosmic ray intensities are approximately 100 times greater than at sea level.

In other experiments, on platforms that were carried up towering mountain heights to elevations as great as 29,000 feet, observations were made of the penetrating power of the rays through lead shields. They showed, Prof. Millikan reported, a rapid "softening" with altitude, and essentially the same softening in temperate latitudes as in equatorial latitudes.

"The observed behavior is such," he concluded, "as to be best interpreted in terms of cosmic ray photon bands of widely differing penetrating power, the less penetrating bands coming into play at the higher altitudes."

With Prof. Millikan in these researches were associated Dr. I. S. Bowen and Dr. H. V. Neher.

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PALEOBOTANY

New Fossil Plant Found In Illinois Deposit

A NEW SPECIES belonging to a long-extinct plant family has been found in what was once the bottom of a shallow pond in Illinois, now a stratum of silt hardened into shaly stone. The stems, leaves, flowers and fruits of this plant, dead for millions of years, were described before the National Academy of Sciences by Dr. David White of the U. S. Geological Survey, who made his discovery while on an expedition under the auspices of the Illinois State Geological Survey.

The plant belonged to the extinct genus known as *Cordaites*, a remote relative of the modern conifers, that lived during the ages when coal was in the making. The character of its wood suggests the modern Araucarias, exemplified by the "monkey-puzzle tree" familiar in the South and in northern greenhouses. Its leaves and the chambered pith within its stem are more like those of the cycads, tropical plants which look like palms but are really much more primitive in their kinships.

The flowers were small, bud-shaped, and covered with overlapping scale-like growths. They were spirally arranged around a central stalk, forming a kind of loose spike. Male and female flowers were borne separately, and both kept their essential organs well protected until maturity. The plant seems to have produced an abundance of pollen, for its pollen sacs were numerous and relatively large.

The seeds found in the Illinois deposit range in age from exceedingly small ones, just formed, to full-grown specimens. A full-grown seed was somewhat less than half an inch in length and about a quarter of an inch wide, and was provided with a flat, flaring wing on each side. It was covered with minute, spinelike scales.

Science News Letter, April 29, 1933

PHYSIOLOGY

Climate Stimulates Sex Activity in Man

MAN'S GLANDS of internal secretion, the sex glands along with the others, are affected by climatic stimulation, Dr. C. A. Mills and Cordelia Ogle, of the University of Cincinnati reported to the Federation of American Societies for Experimental Biology.

Experiments with mice confirmed the findings for humans, that in a cold climate sexual activity begins earlier and fertility is greater. But after one or two generations, in mice, the stimulating effect of a cold climate is lost and apparently functional exhaustion comes on similar to that caused by the severe stimulation of frequent changes from hot to cold climates.

Discussing a report on fertility in males, Dr. Mills said that his studies also confirmed the finding of Dr. David L. Belding, of the Evans Memorial of Massachusetts Memorial Hospitals, that there are two apparent seasonal peaks of fertility.

For men, Dr. Belding found these appeared in June and again in late September.

Science News Letter, April 29, 1933

IN SCIE

ANTHROPOLOGY

Ancient Indians Had Ear Troubles

INDIANS of ancient America, before Columbus came, had plenty of trouble with their ears. One of the commonest of their diseases was bony outgrowths into the external auditory canal. At the meeting of the National Academy of Sciences, Dr. Ales Hrdlicka of the U. S. National Museum described his study of over 7,000 skulls of pre-Columbian Indians as well as later Indians, white men, Eskimos, Negroes, Polynesians and Melanesians.

Complete absence of the bony canal was rare, he found, but bony outgrowths were common. There were none in Negro skulls, and they were rare in skulls from eastern Asia, but frequent in Polynesians and American Indians.

They never exist at birth, and are rare in childhood, developing essentially during the earlier half of adult life. They are somewhat more common in men than in women, and exist more often in both ears than in one ear only. When they do occur on one side it is more often on the left.

Science News Letter, April 29, 1933

PHYSICS

Faint Radiations From Night Sky Called Cosmic

FAINT radiations from the night sky, not perceptible to human eyes but detected and analyzed by the spectrograph, were termed "cosmic radiations of the sky" by Dr. V. M. Slipher, director of the Lowell Observatory at Flagstaff, Ariz., speaking before the American Philosophical Society. The radiations extend throughout the spectrum from ultraviolet to deep infra-red, generally stronger in the longer wavelengths.

Other illuminations from the night sky intercepted by Dr. Slipher's instruments have included light from auroral displays and the brief morning and evening twilight solar stimulation in the high atmosphere.

Science News Letter, April 29, 1933

EE FIELDS

ASTRONOMY

More Dark Matter Than Luminous in Universe

THERE is more dark matter scattered between the stars than there is of shining substance in the stars themselves. Such at least is the indication of astronomical studies reported before the National Academy of Sciences by Prof. Joel Stebbins and Dr. C. M. Huffer, of the Washburn Observatory, Madison.

The two astronomers have been studying the reddening of the light from distant stars in the great group, or galaxy, to which our sun belongs. This reddening is an indication of partially obscuring matter between these stars and ourselves, just as lights on earth are made redder in appearance if they shine through smoke or clouds of dust.

There is so much of this obscuring matter—dust or gas—that it is doubtful whether we can see as far as the center of our galaxy, Prof. Stebbins said. Because of this obscuration effect, it is probable that we have been estimating many astronomical distances much too high, and in future we must allow for this in figuring our estimates.

Science News Letter, April 29, 1933

ARCHAEOLOGY

Ancient Greece Had "Dark Age" Period

ANCIENT Greece had three centuries of "dark ages," comparable to the period of sag in western Europe that came between the final breakdown of the Roman Empire and the rise of medieval culture. Only in ancient Greece the "dark ages" were more completely dark, for whereas in pre-medieval western Europe there was at least some continuation of the old culture, during those three centuries in Greece even the art of writing was lost completely.

This was part of the report brought before the American Philosophical Society by Prof. Rhys Carpenter of Bryn Mawr College. Up to about 1100 B.C. a brilliant civilization flourished in Greece, with its principal center at Mycenae. It was linked with the high culture of Minos, in Crete. It left ruins of great buildings which have been excavated by archaeologists. It left also many inscriptions which as yet nobody has been able to read.

Then, at about the time when the Israelites were conquering the Promised Land, this civilization fell. When the classic Greek culture arose, between 800 and 700 B.C., it was built by a different people who used a different alphabet. The language of classic and modern Greece contains no key to the inscriptions of the civilization that died about 1100 B.C.

But Prof. Carpenter thinks he may have a possible lead. In classic Greek times, the inhabitants of Cyprus continued to use the old script. He suggested today that a study of this neglected Cypriote Greek may at last unlock the secrets of the Mycenaean inscriptions.

Science News Letter, April 29, 1933

PHYSIOLOGY

Over-Supply of Oxygen Found to Be No Advantage

OXYGEN in three to four and one-half times the usual percentage in the air mixture breathed during muscular work seems to offer no advantages, experiments by Dr. Francis G. Benedict and Robert C. Lee of the Nutrition Laboratory of the Carnegie Institution of Washington, at Boston, Mass., indicate. Their researches were reported to the American Philosophical Society.

They used volunteers, who breathed ordinary air containing 21 per cent. of oxygen during part of the tests while the rest of the time they were supplied with air mixtures containing from 60 to 90 per cent. They found no significant alteration in the total oxygen consumption per minute for the same amount of work. Neither was there any change in the ratio of oxygen used to carbon dioxide exhaled, thus indicating no change in the character of the material burned in the body. Finally, the oxygen absorbed during the recovery periods after work remained unchanged.

Prolonged administration of high-oxygen mixtures to animals has been shown to have a toxic effect, but in the present experiments the use of oxygen was discontinued before the human subjects showed signs of oxygen poisoning.

Science News Letter, April 29, 1933

PHYSICS

"Minus Colors" Promise Revolution in Painting

A REVOLUTION in the painter's art may result from a new type of pigments which were demonstrated before the National Academy of Sciences by Dr. Herbert E. Ives, physicist of the Bell Telephone Laboratories.

Hitherto the painter's supposedly "primary" colors were red, yellow and blue. Each absorbed all of the other colors in sunlight except the one it reflected. Mixing these colors theoretically gave blended hues and shades. Actually, however, the artist's palette has had to carry dozens of different kinds of pigments.

Dr. Ives has worked out three pigments which he calls "minus red," "minus blue" and "minus green." Each of these reflects mostly the light-rays complementary to its "minus" hue, but also a large range of others. Mixing them gives all desired ranges of hues, and combining all of them gives black. Adding white, to give tints and for the actually white parts of the painting, Dr. Ives offers a palette carrying only four kinds of paint, which he states are sufficient for every imaginable requirement of the artist.

Science News Letter, April 29, 1933

ASTRONOMY

Twin Super-Universes Seen in the Heavens

GALAXIES, vast lens-shaped aggregations of stars that have received the popular name of "island universes," are often grouped into super-galaxies, which in the aggregate contain simply unimaginable numbers of giant suns. Dr. Harlow Shapley of Harvard College Observatory, one of the leading students of the new knowledge of the structure of the universe, has now discovered that these super-galaxies are often found in pairs. In the course of an address before the National Academy of Sciences, he told of occasionally finding such pairs, separated by less than the diameter of one of the members, out in the vast reaches of space.

Prof. Shapley has been endeavoring to obtain a figure to represent the average distribution of matter in outer space. He stated that in the space beween the galaxies matter exists on the order of 10^{-30} grams per cubic centimeter.

Science News Letter, April 29, 1933

BOTANY

Our Imported Weeds

"A Classic of Science"

The Great American Botanist Discusses Reasons Why Plants Become Weeds And How They Migrate Westward

PERTINACITY AND PREDOMINANCE OF WEEDS; by Asa Gray. In the American Journal of Science and Arts, 3rd series, Vol. XVIII. New Haven: J. D. & E. S. Dana, 1879. This is an exact reprint of extracts from the original publication.

A WEED is defined by the dictionaries to be "Any useless or troublesome plant." "Every plant which grows in a field other than that of which the seed has been (intentionally) sown by the husbandman is a weed," says the Penny Cyclopaedia, as cited in Worcester's Dictionary. The Treasury of Botany defines it as "Any plant which obtrusively occupies cultivated or dressed ground, to the exclusion or injury of some particular crop intended to be grown. Thus, even the most useful plants may become weeds if they appear out of their proper place. The term is sometimes applied to any insignificant-looking or unprofitable plants which grow profusely in a state of nature; also to any noxious or useless plant." We may for present purposes consider weeds to be plants which tend to take prevalent possession of soil used for man's purposes, irrespective of his will; and, in accordance with usage, we may restrict the term to herbs. This excludes predominant indigenous plants occupying ground in a state of nature. Such become weeds when they conspicuously intrude into cultivated fields, meadows, pastures, or the ground around buildings. Many are unattractive, but not a few are ornamental; many are injurious, but some are truly useful. White Clover is an instance of the latter. Bur Clover (*Medicago denticulata*) is in California very valuable as food for cattle and sheep, and very injurious by the damage which the burs cause to wool. In the United States, and perhaps in most parts of the world, a large majority of the weeds are introduced plants, brought into the country directly or indirectly by man. Some—such as Dandelion, Yarrow, and probably the common Plantain and the common Purslane—are importations as weeds, although the species naturally occupy some part of the country.

Why weeds are so pertinacious and aggressive, is too large and loose a question: for any herb whatever when successfully aggressive becomes a weed; and the reasons of predominance may be almost as diverse as the weeds themselves. But we may enquire whether weeds have any common characteristics which may give them advantage, and why the greater part of the weeds of the United States and probably of similar temperate countries, should be foreigners.

As to the second question, this is strikingly the case throughout the Atlantic side of temperate North America, in which the weeds have mainly come from Europe; but it is not so, or hardly so, west of the Mississippi in the region of prairies and plains. So that the answer we are accustomed to give must be to a great extent the true one, namely, that, as the district here in which weeds from the Old World prevail was naturally forest-clad, there were few of its native herbs which, if they could bear the exposure at all, were capable of competition on cleared land with emigrants from the Old World. It may be said that these same European weeds, here prepotent, had survived and adapted themselves to the change from forest to clear land in Europe, and therefore our forest-bred herbs might have done the same thing here. But in the first place the change must have been far more sudden here than in Europe; and in the next place, we suppose that most of the herbs in question never were indigenous to the originally forest-covered regions of the Old World; but rather, as western and northern Europe became agricultural and pastoral, these plants came with the husbandmen and the flocks, or followed them, from the woodless or sparsely wooded regions farther east where they originated. This, however, will not hold for some of them, such as Dandelion, Yarrow, and Ox-eye Daisy. It may be said that our weeds might have come to a considerable extent from the bordering more open districts on the west and south. But there was little opportunity until recently, as the settlement of the country began on the eastern border; yet a certain number of our weeds appear to have been thus derived: for instance, *Mollugo verticillata, Erigeron Canadense, Xanthium, Ambrosia artemisiifolia, Verbena hastata, V. urticifolia,* etc., *Veronica peregrina, Solanum Carolinense,* various species of *Amaranthus* and *Euphorbia, Panicum capillare,* etc. Of late, and in consequence of increased communication with the Mississippi region and beyond —especially by rail-roads—other plants are coming in to the Eastern States as weeds, step by step, by somewhat rapid strides; such as *Dysodia chrysanthemoides, Matricaria discoidea, Artemisia biennis.* Fifty years ago *Rudbeckia hirta,* which flourished from the Alleghanies westward, was unknown east. Now, since twenty years, it is an abundant and conspicuous weed in grass-fields throughout the Eastern States, having been accidentally disseminated with Red-clover seed from the Western States. (*Next Page*)

Wild Flower Preservation Society

A NATURALIZED AMERICAN

Veronica officinalis, a weed as much at home now on this continent as in its native Europe

There are also native American weeds, doubtless indigenous to the region, such as *Asclepias Cornuti, Antennaria margaritacea* and *A. plantaginifolia,* and in enriched soils *Phytolacca decandra,* which have apparently become strongly aggressive under changed conditions. These are some of the instances which may show that predominance is not in consequence of change of country and introduction to new soil.

In many cases it is easy to explain why a plant, once introduced, should take a strong and persistent hold and spread rapidly. In others we discern nothing in the plant itself which should give it advantage. *Lespedeza striata* is a small and insignificant annual, with no obvious provision for dissemination. It is a native of China and Japan. In some unexplained way it reached Alabama and Georgia and was first noticed about thirty-five years ago; it has spread rapidly since, especially over old fields and along road-sides, and it is now very abundant up to Virginia and Tennessee, throughout the middle and upper districts, reaching even to the summits of the mountains of moderate elevation. In the absence of better food it is greedily eaten by cattle and sheep. The voiding by them of undigested seeds must be the means of dissemination; but one cannot well understand why it should spread so widely and rapidly, and take such complete possession of the ground. It is one of the few weeds which are accounted a blessing.

Lespedeza, the "weed which is accounted a blessing," has persisted and spread since Gray's time, and has recently been recognized as an important food plant for cattle in the South. Through the work of research botanists this drought- and flood-resistant forage crop is now becoming available to farmers, who are clamoring for its seed.

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The gem stone alexandrite, named for Alexander II, was prized by Russians because its changing colors—green in daylight, red in artificial light—were the national colors.

There are 150 million acres of National Forest land in this country and 17 million acres of forest land owned or managed by states, counties, and municipalities.

Spectral analysis makes it possible to identify constituents of materials, even detecting copper, silver, and other metals in quantities as small as one-millionth of one per cent.

PHYSIOLOGY

Sympathin, New Hormone and Stimulant, Found To Be Twins

ONE OF THE newest hormones, sympathin by name, is twins, it appears from the report of Prof. Walter B. Cannon, Harvard Medical School, to the National Academy of Sciences. Prof. Cannon explained before the Academy that he has just found there are really two sympathins, I and E.

Sympathin, discovered by Prof. Cannon and associates two years ago, is a hormone produced by smooth muscle. This is the kind of muscle, found in the blood vessels, digestive tract and elsewhere, that contracts involuntarily.

Sympathin is very much like epinephrine, more familiarly known as adrenalin, or adrenin, which is produced by the important adrenal glands. Both substances, for example, quicken the heart beat, cause a rise in blood pressure, and, in the cat, cause increased flow of saliva.

But sympathin is not the same as epinephrine, Prof. Cannon's latest studies show. Furthermore, the sympathin twins are produced at different times by the smooth muscle and have opposite effects on the body.

Sympathin E is produced when smooth muscle is made to contract, and has an exciting, stimulating effect on muscle elsewhere, quickens the heart beat, for instance. Sympathin I is produced when smooth muscle is made to relax and has only an inhibiting, relaxing effect on muscle in other parts of the body.

In a recent discussion, Prof. Cannon said that the discovery of the sympathin twins suggested that epinephrine might be modified chemically so as to use it in a discriminative way. For example, epinephrine or adrenin E, if made, could be used to stimulate the heart, raise blood pressure, etc., without checking or stopping the digestive process. Adrenin I could be used to relax spasms of the gastro-intestinal tract, for example, without raising the blood pressure or increasing the blood sugar. This would increase the usefulness of an already valuable medical aid.

Science News Letter, April 29, 1933

SEISMOLOGY

Death-Dealing Quake Was Not A Major Disturbance

THE RECENT California earthquake (March 10) was not a major shock and its energy was far less than that of the Nevada shock of November 20 to 21 last year, Harry O. Wood and C. F. Richter, seismologists of the Pasadena Seismological Laboratory, have concluded as the result of a preliminary but detailed study of the earthquake.

In magnitude and intensity of local shaking, the March 10 shock probably did not exceed and may even have been less than the Santa Barbara earthquake of June 29, 1925. The greater extent of property damage and loss of life, about 120 persons, in the recent shock is attributable, the seismologists conclude, to the more thickly settled character of the strongly shaken area.

"The intensity of the main earthquake probably nowhere exceeded VIII on the modified Mercalli scale of 1931," the seismologists report. An earthquake of intensity VIII causes slight damage in specially designed structures, partial collapse of substantial buildings and great damage in poorly constructed buildings. Chimneys, monuments, columns and walls fall, heavy furniture is overturned, and even persons driving motor cars are disturbed.

"Apparently stronger shaking at certain points where considerable destruction occurred was very probably due to the water-soaked alluvial character of the ground," the report states. "Damage was most extensive at Long Beach, which happened to be the largest center of population near the origin. At all points, spectacular (*Turn to Page* 269)

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damage is confined almost wholly to bad or improperly designed construction.

Careful study of records of seven seismographs operated in California by the Pasadena Laboratory show that the origin of the earthquake was probably on one of a system of faults which run parallel with the coast in the vicinity lying between the towns of Huntington Beach and Newport Beach. The depth of the origin appears to have been less than usual, probably about six miles.

The occurrence of a small shock on the day before the main earthquake at 1:13 a. m. on March 9 which was sharply felt and caused some alarm at Huntington Beach is reported. The seismologists believe that its origin was near that of the large earthquake. It was evidently a preliminary tremor.

Nearly continuous seismic motion was recorded on sensitive earthquake instruments for many hours after the main shock. None of these was at all comparable in intensity with the main shock, the largest immediate aftershock being that at 10:59 p. m. March 10 with an amplitude less than four hundredths that of the main shock.

In the region just inland from the epicenter, the seismologists found some fissures in soft ground, sand-craterlets, and disturbances to ground water."

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PSYCHOLOGY

New-Born Babies Not Blind Like Kittens

HUMAN BABIES do not come into the world blind like young kittens. Infants' eyes, instead of greeting their new-found surroundings with the blind, innocent stare which has previously been attributed to them, are actually able to see objects and to follow their movement. This was disclosed to the meeting of the Southern Society for Philosophy and Psychology by Dr. W. C. Beasley, of Johns Hopkins University.

No one knows as yet just how his mother's face looks to the newborn, but evidence that he actually can see it has been found by Dr. Beasley even in infants only three brief hours old. Great differences were found in the visual ability of different individuals, and race differences were also detected.

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ANTHROPOLOGY

Modern Man May Be Old As Oldest of "Low-Brows"

MODERN MAN, *Homo sapiens*, may have been in existence in East Africa at the time when Piltdown man was living in England and Peking man in China. This is the conclusion to be drawn from the findings of a conference of the Royal Anthropological Institute which has recently met at Cambridge to examine fresh evidence from Kenya obtained by Dr. L. H. B. Leakey's archaeological expedition to East Africa. The reports of committees appointed by the conference to examine the geological, palaeontological, anatomical and archaeological evidence appear in full in *Nature*.

Until recently the oldest known example of modern man was thought to be Crô-Magnon Man, who lived in Europe in late palaeolithic or Old Stone Age times. Then last year Prof. Elliot Smith pronounced the skull found in London in 1925 and known as "the Lady of Lloyds'" to be the oldest known example of modern man, and dated it back to the beginning of the middle palaeolithic times, perhaps as much as 75,000 years ago.

Now Dr. Leakey has brought back from the fossil-beds of the northeastern shores of Victoria Nyanza fragments of three skulls, a part of a lower jawbone, crude stone implements belonging to two types of stone industry, and fossil animal bones associated with them, which he contends afford evidence for the existence of modern man at the very beginning of palaeolithic times and even before.

The verdict of the conference on these materials is that the stone industries, which correspond to the pre-Chellean and Chellean industries of the lower palaeolithic in Europe, and the fragments of the human skulls and jawbone were undoubtedly associated with the remains of extinct animals—two kinds of elephant, a deinotherium, mastodon, and others—which date them back to early and middle pleistocene, or Ice Age times, while the human remains show no characters inconsistent with their inclusion in the type of modern man.

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PLANT PHYSIOLOGY

NATURE RAMBLINGS

by Frank Thone

By Command of the Sun

MARCH sunshine, and even February sunshine, have as much to do with bringing forth May flowers as have the traditional April showers. And it is not merely the sun's part in thawing the snow and ice of winter, nor his gifts of food through the sugar-making factories in the leaves, that bring about the miracle of bloom in spring woods and fields, but the long-neglected astronomical fact that each day is a little longer than the day before.

For uncounted centuries people had seen the flowers spring up as the sun returned northward after his winter retreat. The connection of increased sunlight with the pleasures of spring had not escaped even the oldest of peoples. From the Nile to the Baltic, from India to Yucatan, men made a god of the sun and invented myths of spring, some of them most poetic and beautiful.

But it was not until a short time ago that two scientists of the U. S. Department of Agriculture, Dr. W. W. Garner and H. A. Allard, discovered that the changing length of day is a potent control over the blossoming time of plants. They put numbers of different kinds of flowers and vegetables into a greenhouse equipped with shades and electric lights, so that they could give them a wholly artificial length of "day," making it at will longer or shorter than the natural day. They soon found that plants whose season of bloom came before midsummer were stimulated into flower production by increasing the light-period a little each day, whereas plants of naturally late flowering habits could be brought into bloom by daily shortenings of light. Typical "long-day" plants are crocus, hyacinth, iris, columbine, lily of the valley—all spring flowers. "Short-day" flowers include goldenrod, aster, chrysanthemum, sunflower—flowers of autumn and late summer.

Since these pioneer workers carried on their experiments, many other botanists, as well as commercial florists, have repeated the work and elaborated on it, so that greenhouses are hardly accounted complete unless they have their batteries of electric lights to make artificial lengthening of daylight possible. But in our admiration of the ingenuity of human gardeners, we must not lose sight of the fact that the first to use this method of bringing flowers into bloom by changing the length of day was the ruler of day itself, the sun.

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Cover Picture

WHILE DREDGES grappled with her sister ship's twisted girders and soaked fabric in the watery Atlantic grave off Barnegat Light, the Macon took to the air. The front cover presents the new queen of the skies as she appeared before being "walked" from the huge Akron air dock for the first trial flight.

The photograph is a study in superlatives. The end of the air dock, through which the Macon is exposed, is 325 feet wide and 200 high. Its length is 1,175 feet. Even the world's largest airship is dwarfed in this structure. The Macon has an overall length of 785 feet, overall height of 146 feet and a 6,500,000 cubic-foot gas capacity.

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The Aztec Indians called corn "teocentli" meaning food of the gods.

PUBLIC HEALTH

Big Increase in Leprosy Due Largely To Better Reporting

LEPROSY is increasing in many parts of the world by leaps and bounds.

This startling declaration made by Dr. O. E. Denny, director of the U. S. Marine Hospital at Carville, La., national leper home, needs some qualifying, Dr. Denny explained in a Science Service interview. He discussed the leprosy problem at the meeting of the medical board and the advisory committee on research of the Leonard Wood Memorial, a fund supported by the American public and devoted to the study of the nature and treatment of leprosy.

The number of known cases of leprosy is increasing in many countries, Dr. Denny explained. In the United States, for example, each year more cases are discovered and segregated. But there are probably no more cases of the disease now than there were 25 years ago. The apparent increase, that is, the increase in reported cases, is due to the fact that doctors are learning more and more to recognize cases of leprosy and to diagnose it correctly.

In India, for instance, there were about 300,000 recognized lepers about 50 years ago. Now there are between one and three million recognized lepers in that country. Whether this enormous increase is real or is apparent and due to better diagnosis and reporting, we shall never be able to find out, Dr. Denny said. Probably the increase is only apparent, however.

In one or two countries there is an actual increase in leprosy. In South America, authorities are concerned over the situation. In Argentina, where there was no leprosy to speak of 25 years ago, it seems to be increasing in actual fact. A possible explanation may be that more and more remote mountain villages and their Indian inhabitants are coming into contact with the larger towns and with civilization. Leprosy is to some extent a disease of civilization, and it is being spread as commerce grows between the remote villages and the larger towns where a few cases of the disease exist and where the Indians may come in contact with it for the first time.

In the South Pacific, in one or two of the very small islands, leprosy also is increasing and here, too, Dr. Denny believes the increase is a real one.

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A new broadcasting station near San Francisco was christened on its opening night with a "bottle of nothing"—a glass bulb containing the nearest approach to a vaccuum that can be made.

•First Glances at New Books

Additional Reviews On Page 272

Philosophy

THE PHILOSOPHY OF A SCIENTIFIC MAN—Paul R. Heyl—*Vanguard,* 182 p., $1.50. "This is the philosophy of a scientific man. Not of all scientific men, not yet perhaps of many, but it is the fruit of a lifetime on the part of a mind which has run the whole gamut of religious and philosophical thinking, which has tarried long in one oasis after another, and which has finally reached the views here set forth." Dr. Heyl is a physicist on the staff of the National Bureau of Standards known for his work on the gravitational constant and as the co-inventor of the earth inductor compass.

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Photography

NEWS PHOTOGRAPHY—Jack Price—*Industries Publishing Co.,* 165 p., $2. Here is a book full of fascinating reading for those who appreciate the thrills behind the news picture and valuable instruction for the photographer, amateur or professional, who would give his pictures that cash-demanding intangible something called "news-value." The author made a reputation for himself as a metropolitan news photographer. He draws liberally on his adventures in telling what a good news picture really is and how to take it. Cameras and developing and printing are also discussed in language that can readily be translated into action by the lay reader. Plate illustrations include a number of classic news pictures.

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Education—Ethnology

THE HOUSE OF THE PEOPLE—Katherine M. Cook—*Government Printing Office* 73 p., 10c. It is surprising to find a United States Government publication wearing "Mexican costume." The black and white illustrations are from woodcuts used in Mexican school reading books. The format of the little publication is in keeping with the nicely illustrated pages. The subject of this unusual and interesting bulletin is Mexico's new experiment in educating her large native population.

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Archaeology

THE ARCHAEOLOGY OF PORTER COUNTY—J. Gilbert McAllister—*Historical Bureau, Indiana Library and Historical Department,* 74 p., 44 pl., free. A description of aboriginal remains and excavations in an Indiana country. The region was inhabited by mound-building Indians whose culture bore some resemblance to the Hopewell culture, and is pronounced by Mr. McAllister to be a variant of that type.

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Psychology

THE PHYSICAL DIMENSIONS OF CONSCIOUSNESS—Edwin G. Boring—*Century,* 251 p., $2.25. Psychologists agree with physiologists in preferring to have their psychological theories grounded in physiology. In his preface, the author attributes to the conceit of physiologists and the modesty of psychologists the fact that only recently has the suggestion been made that neural theories should be tested for compatibility with psychological fact. This book is the result of assuming such a reversible logic. Boring points out that just as in introspection there is no clear line distinguishing observation from inference, so in science too the distinction is never sharply defined. And the line of demarcation between useful hypothesis and dangerous speculation is, he says, necessarily indeterminate and personal, but, "The reader will have no difficulty in discovering that I look upon the contents of this book as 'useful hypothesis.' "

Science News Letter, April 29, 1933

Library Science

THE SECONDARY-SCHOOL LIBRARY—Bulletin, 1932, No. 17—Office of Education—*Government Printing Office* 110 p., 10c.

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National Parks

YELLOWSTONE NATIONAL PARK—Hiram M. Chittenden, revised by Isabelle F. Story and Eleanor Chittenden Cress—*Stanford Univ. Press,* 286 p., $3. Gen. Chittenden's book, now in its fourth edition, is still perhaps the most comprehensive and complete single-volume description of Yellowstone National Park, its beauties and wonders, its background of history and legend. The revision, carried out very carefully by his daughter and the editor of the National Park Service, preserves the original wording intact as nearly as is consistent with bringing the contents thoroughly up to date.

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Economics

DISPLACEMENT OF MEN BY MACHINES—Elizabeth Faulkner Baker—*Columbia University Press,* 284 p., $3.50. Technocultural unemployment is the phrase suggested by the author to designate the phenomenon of labor displacement in the printing industry as well as many other industries. It is explained that this publication, which aims to trace the economic and social fate of manual press feeders displaced by mechanical feeders, is the first that deals both with changing technology and labor displacement in representative plants and with the subsequent economic history of the men displaced. The printing industry with its clicking presses was selected because it has ranked high among those popularly grouped among the man-displacing trades. But as the search proceeded the effects of machine installation became more obscure rather than less so. Dr. Baker is careful to point out that she has considered neither the additional work created by the design and production of the labor-saving machines nor the effects of pressroom mechanization upon the supplying and consuming industries.

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Geology

THE JURASSIC SYSTEM IN GREAT BRITAIN—W. J. Arkell—*Oxford Press,* 681 p., 41 pl., $7.75. This book may well serve as a model for the thorough and complete treatment of a geologic system for a single limited region. After a general preliminary section and a discussion of the tectonics involved, each separate subdivision of the system is taken up seriatim and given exhaustive treatment through text and diagram. There is a bibliography of 48 close-printed pages, and an excellent index.

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Engineering—Geology

FIELD GEOLOGY—Frederic H. Lahee—*McGraw-Hill,* 789 p., $5. This is the third edition of a well-known text by the former assistant professor of geology at the Massachusetts Institute of Technology, now chief geologist for an oil company. Among the chapters which have been revised to include developments since the second edition in 1923, are those on geophysical sur-

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veying and airplane mapping. The student with a general knowledge of geology as well as the engineer will find this handbook size volume with semi-flexible binding valuable for both field and indoor work.

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Engineering

AIR CONDITIONING FOR COMFORT—Samuel R. Lewis—*Engineering Publications,* 244 p., $2. What air conditioning is all about is told in a very practical way in a book that will be interesting, informative and readily understandable to those familiar with the engineering terminology of the field. Many different kinds of apparatus for controlling temperature, moisture, motion, distribution and cleanliness of air are described.

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Geology

THE PRINCIPLES OF HISTORICAL GEOLOGY FROM THE REGIONAL POINT OF VIEW—Richard M. Field—*Princeton Univ. Press,* 283 p., $3.50. Professor Field uses a technique new to geological textbooks. After giving the history of geology with adequate brevity, discussing sedimentary rocks and the technique of matching one stratum with another, he presents to the student descriptions of typical geological provinces in the ascending order of their structural complexity. Thus, Professor Field puts into a textbook, so far as that is possible, the essence of the method that he has developed through the field courses in geology given by the International Summer School of Geology and Natural Resources of which he is director. During the past seven years he has traveled with his classes over 66,000 miles in North America and Europe visiting, among others, the geological provinces that he describes: the Grand Canyon Region, Niagara Falls, the Appalachians, the Northwest Highlands of Scotland, the Alps and Yellowstone Park and Big Horn Basin Region. Ten lithographed folding plates provide adequate maps and diagrams of the regions described and the text illustrations in line are numerous.

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Ethnology

THE STORY OF KALAKA—W. Norman Brown—*Smithsonian Institution,* 149 p., 15 pl., paper $2, cloth $2.50. In libraries and museums of India, Europe, and America, Mr. Brown has pursued his quest for manuscripts treating of the Kalaka legend in the Jain religion. This monograph presents his conclusions on the subject he has so closely studied, and gives certain texts and translations. Of special interest are the miniatures, described and pictured, and the outline of the development of Western Indian painting. The work is published by the Freer Gallery of Art of the Smithsonian Institution.

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Horticulture—Cookery

GARDENING WITH HERBS—Helen Morgenthau Fox—*Macmillan,* 334 p., $3.50. Herb gardening has almost disappeared as a New World art, and it is a pity, both for our sense of history and for our gustatory senses. For there were herb gardens before there were flower gardens, and in those days cooks knew how to dress a dinner more attractively than they seem to know now. The author does the world a service by gathering authentic botany, interesting folklore and mouth-watering receipes—all information about herbs—into one attractive volume.

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Zoology

FAUNA OF THE NATIONAL PARKS OF THE UNITED STATES—G. M. Wright, J. S. Dixon and B. H. Thompson—*Govt. Print. Off.,* iv + 157 p., 20c. This exceedingly useful addition to the growing literature on our national parks is listed as No. 1 of a new Fauna Series of a Wild Life Survey conducted by the Branch of Education and Research of the National Park Service. It is more than an interesting presentation of facts about the animals of the national parks; it sets forth the problems in wild life administration that beset the Service, tells what can be done to meet them under present conditions, and suggests desirable changes that may contribute more effectually to their fuller solution.

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Physics

CONDUCTION OF ELECTRICITY THROUGH GASES, Vol. II, IONISATION BY COLLISION AND THE GASEOUS DISCHARGE—Sir J. J. Thomson and G. P. Thomson—*Macmillan,* 608 p., $6.50. This is, of course, one of the classics. This volume completes the third edition, the first volume of which was published in 1928. It deals with ionisation by collision and by X-rays and with the properties of electrical discharge in all its forms, glow, spark and arc.

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Economics—Political Science

THE GREAT TECHNOLOGY, SOCIAL CHAOS AND THE PUBLIC MIND—Harold Rugg—*John Day,* 308 p., $2.50. Labelled "This is not a book on Technocracy," this volume presents a plan for social reconstruction. Dr. Rugg, who is professor of education at Teachers College, Columbia University, suggests a national council of cultural reconstruction to utilize the unemployed cultured and creative workers at a cost of two to three billion dollars a year, stating that if a choice must be made between liquidating banks and liquidating creative youths, it would be wiser to cast the banks into the discard rather than the youths.

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Archaeology

EXTENSIONES CRONOLOGICO-CULTURALES Y GEOGRAFICAS DE LAS CERAMICAS DE MEXICO—Eduardo Noguera—*Talleres Graficos de la Nacion, Mexico, D. F.,* 26 p., 13 pl. Traces development of Mexican pottery from archaic forms into the specialized types of the Aztecs, Mixtecs, Mayas and others. Sr. Noguera presented this study before the International Congress of Americanists in 1932.

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Ethnology

FOOD AND CHARACTER—Louis Berman—*Houghton Mifflin,* 368 p., $3.50. An interesting book, but the reader should bear in mind that physicians in general do not agree with Dr. Berman's theories.

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